

## Active Elastic Skins for Soft Robotics

Completed Technology Project (2014 - 2021)



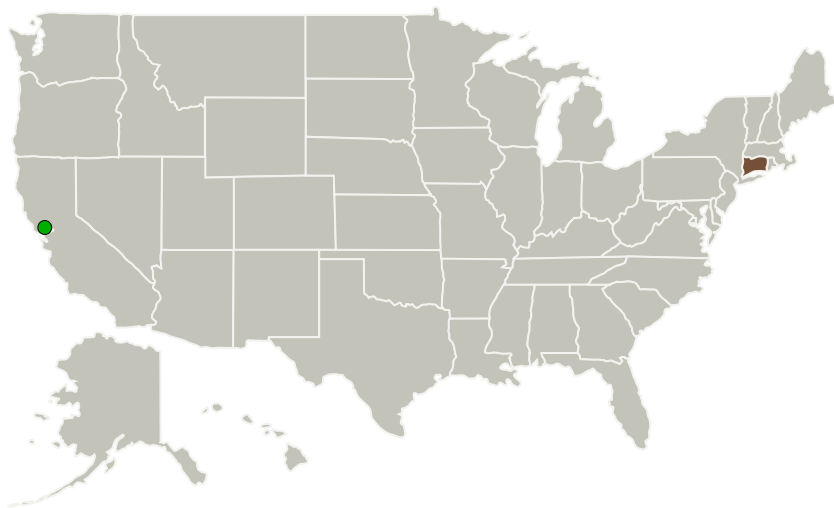
## Project Introduction

The use of the word robotic implies a rigid, bulky, and complex device. However, a confluence of factors now makes it possible to shed this stereotype and build robots that exploit the properties of soft deformable materials. The goal of this project is to enable a class of soft robots where all the functional elements are embedded in a removable and transferable skin. This research will enable active elastic skins, where a 2D skin may be wrapped around any highly deformable 3D object to create a highly functional soft robot. Using this approach, any deformable material may be the foundation of a soft robot, such as an inflatable balloon or block of foam. Active elastic skins will be fabricated in 2D, transported in 2D, and then positioned on an inert 3D host to enable a fully functional 3D robot. Active elastic skins will enable more efficient transportation of robots, increased versatility in robots, and new paradigms in soft robotic design.

## Anticipated Benefits

Active elastic skins will enable more efficient transportation of robots, increased versatility in robots, and new paradigms in soft robotic design.

## Primary U.S. Work Locations and Key Partners



Active Elastic Skins for Soft Robotics

## Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Project Website:	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

## Active Elastic Skins for Soft Robotics

Completed Technology Project (2014 - 2021)



Organizations Performing Work	Role	Type	Location
Yale University	Lead Organization	Academia	New Haven, Connecticut
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

## Primary U.S. Work Locations

Connecticut

## Project Website:

<https://www.nasa.gov/strg#.VQb6T0jJzyE>

## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Lead Organization:

Yale University

## Responsible Program:

Space Technology Research Grants

## Project Management

## Program Director:

Claudia M Meyer

## Program Manager:

Hung D Nguyen

## Principal Investigator:

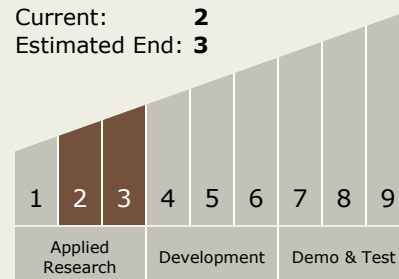
Rebecca K Kramer

## Technology Maturity (TRL)

Start: 2

Current: 2

Estimated End: 3





## Technology Areas

### Primary:

- TX04 Robotic Systems
  - └ TX04.3 Manipulation
    - └ TX04.3.1 Dexterous Manipulation

## Target Destinations

Mars, Others Inside the Solar System